

ABSTRACT

A honeycomb-like shell is provided for an acoustic projector used in sonar applications to increase the bandwidth of the projector, reduce its weight, and to provide increased power density and reduced shell costs. The shell has outer and inner layers, with the honeycomb structure therebetween. The honeycomb shells have application in slotted cylindrical projectors, flexensional projectors, inverse flexensional projectors, and oval-shaped projectors in which the honeycomb structure replaces the solid shells, with the honeycomb providing the relatively high specific stiffness required for the acoustic properties of the projector. The honeycomb shell achieves the same bending stiffness of the solid shells with less weight through the utilization of radial stiffeners between the inner and outer layers. The use of the honeycomb structure increases bandwidth by over 30%, and reduces total weight by 22%, shell weight by 65% and shell cost by 50%, making the honeycomb shell ideal for low frequency sonar applications.